



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,448	06/10/2005	Thomas Netsch	PHDE020303US	3792

38107 7590 07/01/2009
PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P. O. Box 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER

MEHTA, PARIKHA SOLANKI

ART UNIT	PAPER NUMBER
----------	--------------

3737

MAIL DATE	DELIVERY MODE
-----------	---------------

07/01/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/538,448	Applicant(s) NETSCH ET AL.	
	Examiner PARIKHA S. MEHTA	Art Unit 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 June 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because: the date of the signature of Inventor 202 is missing.

Specification

2. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Art Unit: 3737

Extensive mechanical and design details of apparatus should not be given.

3. The abstract of the disclosure is objected to because it exceeds 150 words. Correction is required. See MPEP § 608.01(b).
4. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the **novel features** of the invention to which the claims are directed. Furthermore, the title should reflect that both a system and method are claimed.

Drawings

Art Unit: 3737

6. The drawings are objected to because Figure 1 is not adequately illustrative of the claimed invention. The boxes shown therein should be accompanied by descriptive text or images; reference numerals alone are not sufficient. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

7. Claims 1-14 are objected to because of the following informalities:

In claim 1, step c, “(determined in step b)” should be removed.

In claim 1, step d, “(calculated in step c)” should be removed.

In claim 1, step d, “(is determined in step b)” should be removed.

In claim 1, step d, it is unclear what is being set forth by the recitation “in that the geometrical transformaiton in such a way that, by it,”.

In the preamble of claim 2, “(is determined in step b)” should be removed.

In line 2 of claim 3, “(determined in step b)” should be removed.

In line 5 of claim 3, “means of” should be removed.

In line 2 of claim 4, it is unclear whether “a plurality of reference slice images” is a recitation of the reference slice images already established in claim 1, or whether such slice images are an additional plurality of reference slice images.

In line 5 of claim 4, “a a” should be replaced with --a--.

In step b of claim 5, “alilgnment” should be corrected to read --alignment--.

In claim 6, “image-making means” is an improper means plus function recitation.

Art Unit: 3737

In line 3 of claim 6, "make" should be corrected to read --makes--.

In line 10 of claim 6, "eac" should be corrected to read --each--.

In lines 10-11 of claim 6, it is unclear what is being recited by "which at least two earlier reference images were made using earlier imaging parameters".

In lines 15 and 16 of claim 6, "both" should be replaced by --each--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 1-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 1-14 recite a method, computer method, and systems for tomographic imaging including elements and steps for "determination of a geometrical transformation **by which** the current reference slice images are brought into agreement with earlier reference slice images" (emphasis added). In other words, the claims recite elements and steps for bringing the current and earlier reference images into agreement via the determined geometrical transformation. In contrast, the specification describes determination of the geometrical transformation via bringing the current and earlier reference slices into agreement (Specification p. 3 lines 20-30, p. 5 lines 17-18). Stated alternatively, the claims set forth that the geometrical transformation is determined prior to, and subsequently used to, enable the reference image registration, whereas the specification describes the registration as being performed prior to and used to determination of the geometrical transformation. Accordingly, the specification does not enable that which is recited in the claims.

Claims 1-5 further recite a method and computer-readable medium programmed to perform the method, wherein the method includes the step of bringing all current and reference slice images into agreement simultaneously. The specification merely states that "the geometrical transformation 2 is determined in such a way that both of the current reference slice images 1, 1' are brought into agreement

Art Unit: 3737

with the corresponding earlier reference slice images 3, 3' simultaneously". In other words, the disclosure does not provide sufficient detail for achieving the simultaneous registration such that a skilled artisan would be able to reasonably determine how to make and use the claimed invention without undue experimentation to ascertain what is meant by "such a way". Accordingly, the step of simultaneous registration is not sufficiently enabled by the disclosure.

Claim 4 further recites the image resolution as being higher in two imaging directions than in a third direction. The specification does not disclose such a step of imaging in three directions, nor does the specification discuss the relative image resolution as being higher in two of the three directions. Accordingly, a skilled artisan would not be reasonably enabled to make and use the claimed invention, given the present disclosure.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 1-4, 6-9 and 11 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitations "their relative positions and orientations" and "the relative positions and orientations" in lines 16-18. There is insufficient antecedent basis for these limitations in the claim.

Claim 4 recites the limitation "the image resolution" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 4 recites the limitation "the slice image directions" in lines 5 and 6. There is insufficient antecedent basis for this limitation in the claim.

Claim 6 recites the limitation "the image making" in line 20. There is insufficient antecedent basis for this limitation in the claim.

Claim 11 recites the limitation "the corresponding earlier reference slice images" in lines 5 and 6. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 3737

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 6, 8-10 and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Applicant's admitted prior art.

Regarding claims 6, 8-10, 12 and 14, Applicant admits that the prior art discloses systems comprising image-making means, a computer that operates the image-making means, the computer being programmed to receive earlier reference slice images oriented in parallel along two orthogonal directions, make current reference images oriented in parallel along two orthogonal directions, calculate a geometric transform that transforms the earlier and current reference slice images into alignment with each other, operating on the earlier imaging parameters to generate current imaging parameters, and controlling the image-making means to generate a diagnostic slice image using the current image parameters (Specification p. 1 line 27 - p. 2 line 11). Applicant also admits that the systems of the prior art generate earlier and current reference images having a resolution that is different along each of the two orthogonal directions (Specification p. 2 lines 15-17).

Regarding claim 13, any slice image of the human body, as disclosed in the admitted prior art, inherently has a specific orientation relative to (i.e., "in") a head-foot direction, an anterior-posterior direction, and a right-left direction. As such, the admitted prior art meets the claim.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner

Art Unit: 3737

to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

16. Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Grimson (US Patent No. 5,531,520), hereinafter Grimson ('520), of record.

Regarding claims 1 and 5, Applicant admits that computerized methods are known in the art for making current reference slice images, determining a geometrical transformation by which the current reference slice images are brought into agreement with earlier reference slice images, calculating current imaging parameters by transforming earlier image parameters, and making a current diagnostic slice image via the current imaging parameters, wherein "brought into agreement" is interpreted to constitute making the relative positions and orientations of both reference image types agree in three dimensions. The admitted prior art does not teach that all current reference slice images are brought into agreement with the reference slice images simultaneously. In the same field of endeavor, Grimson ('520) teaches computerized methods for simultaneously registering all points for two 3D image datasets, wherein the 3D image is interpreted to constitute multiple slice images (col. 6 lines 17-41). It would have been obvious to one of ordinary skill in the art at the time of invention to have modified the admitted prior art to include the simultaneous registration of Grimson ('520), in order to enhance the speed of the procedure.

Regarding claims 2 and 3, Grimson ('520) teaches the geometrical transformation as including identification of reference points in the current slice images that agree with reference points in the earlier slice images (col. 6 lines 41-54). Grimson ('520) further teaches the geometrical transformation to be a rigid transformation defined by a set of transformation parameters calculated by an optimization algorithm (Fig. 2, col. 6 lines 17-41). It would have been obvious to a skilled artisan to have used the geometrical transformation of Grimson ('520) as the generalized transformation admitted to be known in the art, as such a modification requires nothing more than the mere combination of known prior art steps to yield predictable results, which has previously been held as obvious and unpatentable (*KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385).

17. Claims 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art.

Applicant admits that the prior art substantially teaches all features of the present invention as previously discussed for claims 6 and 10. The admitted prior art does not expressly teach the system as

Art Unit: 3737

being programmed to calculate the geometric transform as a rigid or affine transformation defined by a set of transformation parameters determined automatically by a suitable algorithm which optimizes a measure that represents a similarity of the current reference slice images to the earlier reference slice images. The admitted prior art does separately teach rigid and affine transformations (see for example p. 8 of the Maintz reference, cited at p. 2 of the Specification). Applicant further admits that algorithms for computing transformation parameters by optimization of similarity are known in the art (Specification p. 4 lines 16-21). It would have been obvious to one of ordinary skill in the art at the time of invention to have combined the admitted prior art system of claims 6 and 10 with the admitted known elements for rigid and affine transformation, as well as the admitted known optimization algorithms to thereby yield the claimed invention, as such a modification requires nothing more than the mere combination of known prior art elements to yield predictable results, which has previously been held as obvious and unpatentable (*KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385).

Response to Arguments

18. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection. Claim 4 is not rejected in view of the prior art, but is not found to recite allowable subject matter in view of the deficiencies under 35 U.S.C. 112 identified herein.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PARIKHA S. MEHTA whose telephone number is (571)272-3248. The examiner can normally be reached on M-F, 8 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571.272.4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3737

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRIAN CASLER/

Supervisory Patent Examiner, Art Unit

3737

/Parikha S Mehta/

Examiner, Art Unit 3737